

Arguments/Remarks

The status of the claims is: Claims 3,5, 6, 8, 11-16, 18-21, 25, 36 and 43 are currently amended. Claims 1-2, 4, 17, 22-24, 28 and 37-42 are canceled.

The Examiner has objected to the specification and drawings as not supporting claims 22-24 which recite a locking mechanism. Applicant, without any admission as to the scope of the Examiner's objection, has canceled claims 22-24 to obviate such objection. It is respectfully requested that such objection be withdrawn.

The Examiner has also objected to the drawings on the basis that the pumps recited therein must be shown in the drawings. Applicant has accordingly amended Fig. 1 to show one "pump" connected to the nutrient medium outlet and another "pump" connected to the nutrient medium inlet. It is submitted that addition of the two pumps to amended Fig. 1 is fully supported by the specification at page 4 line 17 to page 5 line 4, and at page 8 lines 1-32. Accordingly the addition of the two pumps to Fig. 1 does not constitute new matter and it is respectfully requested that the enclosed amended Fig. 1 be entered and the subject objection be withdrawn.

Applicant has accordingly amended the specification to eliminate any reference to the fact that the pumps are "not shown".

Claim 36 has been objected to on the basis of the use of a trademark therein, namely "PERSPEX™". PERSPEX is a trademark for the generic material Poly (Methyl Methacrylate) and accordingly, as requested by the Examiner, Applicant has amended the specification and claim 36 to remove the trademark and replaced it with the generic term.

Claims 2, 7-8, 11-12, 14-18, 21-22, 24, 29, 35, and 43 have been rejected under 35

U.S.C. 102(b) as being anticipated by *Stoppini et al. (Stoppini)*. Applicant respectfully traverses that rejection.

The embodiments of Applicant's invention relate to an exposure device for fluid mixtures, and particularly with such a device which is of particular utility in exposing living cell cultures to cigarette smoke. Applicant's embodiments are designed to be simple, inexpensive and easy to use in comparison to prior art devices for the same applications. In particular, Applicant's embodiments allow the fluid mixture to be continuously fed through the device from an inlet to an outlet to provide substantially contemporaneous fluid exposure to each cell culture chamber within the device. Additionally Applicant's embodiments are provided with a simple medium directing means comprising an island within the nutrient medium chamber, arranged in a manner to provide substantially contemporaneous nutrient medium replenishment at each of the cell culture chambers.

The *Stoppini* reference cited by the Examiner relates to a device not suited to the purposes of Applicant's embodiments. Firstly, *Stoppini* discloses a device which has only an inlet for the introduction of a gaseous mixture. It contains no outlet for the gaseous mixture and is therefore incapable of providing a continuous flow of a gaseous mixture over the cultures therein, as is needed for the purposes of Applicant's embodiments.

The Examiner has pointed to sealing devices 4 and 4' which are stated to be "fully capable of acting as an inlet or outlet". This characterization of seals 4 and 4' is strongly traversed. As

“seals”, structures 4 and 4’ are designed and function to eliminate the flow of fluid through the *Stoppini* device, a purpose and function which is clearly a teaching away from the embodiments of Applicant’s invention. There is nothing in *Stoppini* would lead one skilled in the art to initiate fluid flow via a syringe or similar device and make the seals function in a totally opposite manner (that is as an inlet and outlet) than that for which they were designed, and thus to function as the Examiner has speculated without any teaching, suggestion, or motivation to do so.

Moreover, the *Stoppini* device has no medium directing means positioned within the flow of the culture medium thereof to provide substantially contemporaneous nutrient medium replenishment to the cell culture sites therein. Other features such as the use of cell culture chambers which extend from the fluid exposure chamber and into the nutrient medium chamber, are also missing from the disclosure of *Stoppini*. In order for a reference to anticipate a claim, the reference must teach every element of the claim (M.P.E.P. §2131). As discussed above, *Stoppini* fails to teach a number of the elements recited in Applicant’s claim 43, and therefore fails as well as to each of the remaining claims in the application which are all dependent directly or indirectly from claim 43. Accordingly it is requested that the rejection under 35 U.S.C. 102(b) be withdrawn.

Claims 9-10, 13 and 19-20 have been rejected under 35 U.S.C. 103(a) over *Stoppini*. The deficiencies of *Stoppini* as a reference have been discussed above. With regard to the absence of both inlet and outlet for the fluid introduced into *Stoppini*, Applicant has discussed why *Stoppini* is actually a teaching away from the embodiments of Applicant’s invention. Additionally there is

nothing to teach, suggest, or motivate one in *Stoppini* to provide a nutrient medium directing means of any type, and clearly not of the construction disclosed and claimed by Applicant for use in the nutrient medium chamber. Accordingly there is nothing in the teachings of *Stoppini* which would make obvious the construction of Applicant's embodiments as recited in claim 43 and the other claims dependent therefrom.

Claims 3-6 and 40-42 have been rejected under 35 U.S.C. 103(a) over *Stoppini* in view of *Minchinton*. Claims 40-42 have been canceled. The deficiencies of *Stoppini* as a reference have been discussed above, and they are not cured by the reference to *Minchinton*. The *Minchinton* device has neither inlets nor outlets for fluid or nutrient medium, and therefore there is no flow-through of either in the *Minchinton* device. *Minchinton* discloses a magnetic stirrer driven by an external magnet, a relatively complex device as compared to Applicant's very simple nutrient medium directing means, which vigorously stirs the liquid medium of *Minchinton* to compensate for the absence of any medium flow. Accordingly, since *Stoppini* does provide a flow of nutrient medium through its device, and does not indicate the need for any medium directing means, there would be no motivation to use in the *Stoppini* device a vigorous magnetic stirrer of the type which is taught by *Minchinton* for use in a non-flowing system. The only basis for an Examiner's suggestion to do so would require a knowledge of Applicant's disclosure. It is respectfully requested that this rejection be withdrawn.

Claims 23 and 30-34 have been rejected under 35 U.S.C. 103(a) over *Stoppini* in view of *Aufderheide* and *Rose*. Claim 23 has been canceled.

The relevance of *Aufderheide* to these claims is not understood since the drawing of the apparatus on page 142 thereof clearly does not show a fluid dispersing means as disclosed in this application. The reference to *Rose* relates to a device for the deposition of material films on a semi-conductor slice, an art totally non-analogous to that of the present application. It is submitted that one designing an apparatus for exposing living cell cultures to cigarette smoke or other fluids would not look to the semi-conductor art for solutions. Moreover the disc 20 of *Rose* has a quite different structure than the means disclosed in this application. Finally, neither *Aufderheide* nor *Rose* overcome the deficiencies noted above for the main *Stoppini* reference, and since claims 30-34 depend directly or indirectly from claim 43, they are patentable for the same reasons .

Claims 25-27 and 36 have been rejected under 35 U.S.C. 103(a) over *Stoppini* in view of *Gruenberg*. Applicant submits that the ability of the pumps to have different pump rates relates to the structure of the pumps and is not merely a process limitation. *Gruenberg* has no teaching, suggestion or motivation to use pumps structured to operate at different pump rates, and the Examiner's assertion that the *Gruenberg* pumps "would be fully capable of operating at separate pump rates" is not supported by the reference. Moreover, claims 25-27 and 36 depend directly or indirectly from claim 43, the patentability of which over *Stoppini* has been discussed above. The reference to *Gruenberg* does not overcome the deficiencies of *Stoppini* as a reference, and therefore claims 25-27 and 36 are patentable for the same reasons discussed for claim 43.

Accordingly it is submitted that this application is now in condition for allowance, and

such action is respectfully requested.

The Examiner is invited to contact the undersigned attorney by phone if there are any further issues that require discussion.

Respectfully submitted,

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